

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION**

DONNA CURLING, ET AL.,)	
)	
Plaintiffs,)	
)	CIVIL ACTION
vs.)	
)	FILE NO. 1:17-cv-2989-AT
BRAD RAFFENSPERGER,)	
ET AL.,)	
)	
Defendants.)	

COALITION PLAINTIFFS' STATUS REPORT

The Coalition Plaintiffs (“Coalition”) submit this Status Report to provide the Court with an overview of their position on the current status of the litigation. Pursuant to the Court’s March 18, 2019 Docket Entry Order, Plaintiffs conferred with Defendants via telephone on April 1, 2019 regarding the case’s scope in light of recently signed HB316 and proposed discovery. The parties reached no agreement.

This Status Report provides an overview of recent and upcoming elections and explains why HB316 does not moot the case. Coalition then describes the relief it continues to seek¹ and addresses discovery and scheduling.

¹ The relief that Coalition seeks is the same as the relief demanded in formal letters to Defendants beginning April 16, 2018. More recently, Coalition documented objections to HB316 in letters dated February 18, 2019 (copy attached as Exhibit 1), March 24, 2019 (copy attached as Exhibit 2) and April 1, 2019 (copy attached as Exhibit 3). A copy of the April 16, 2018 letter is attached to the March 24 letter which is attached as Exhibit 2.

A. Events Since the Court's September 17, 2019 Order

In its September 17, 2019 Order, this Court stated:

While Plaintiffs' motions for preliminary injunction [Docs. 258, 260, 271] are DENIED, the Court advises the Defendants that further delay is not tolerable in their confronting and tackling the challenges before the State's election balloting system.

Curling v. Kemp, 334 F. Supp. 3d 1303, 1327 (N.D. Ga. 2018), *aff'd in part*, *appeal dismissed in part*, No. 18-13951, 2019 WL 480034 (11th Cir. Feb. 7, 2019).

Since the November general election, state and local authorities have conducted numerous elections with the DRE system, including the December 4, 2018 run-offs, and elections and runoffs in January through March 2019 in approximately 50 counties. Special elections are scheduled for April 9 and April 16. "Placeholder" election dates appear on the Secretary of State's calendar for June, July, September and October, 2019. Defendants' counsel estimates that approximately 115 counties will conduct election in November 2019.

Coalition knows of no efforts by the State to address system security issues in the DRE system that, absent injunctive relief, will be used to conduct the 2019 elections. Coalition intends to show that Georgia elections continue to be marred by numerous system failures and irregularities.

On April 2, 2019 Governor Kemp signed HB316 into law mandating implementation of a new voting system using electronic touchscreen "ballot market devices" ("BMDs"). BMDs are quite similar to the State's current DREs.

Although BMDs produce paper records, they are computer-generated paper records and thus are not auditable, as described in section B below.

The State has issued an RFP for the BMD equipment; responses for the \$150 million project are due on April 23, 2019. The RFP indicates that the State intends to conduct a ten-county pilot in November 2019, and to use the new system statewide for the first time in the March 2020 Presidential primaries. Election officials have publicly commented that this is an ambitious schedule and undertaking. Secretary Raffensperger states that his office will be “running and gunning” to meet the system conversion timetable.²

BMD implementation risks are very high. Before a contract for the work can be signed, serious internal conflicts in the legislation must be resolved.³ Georgia’s installation would be the largest and most complex voting system conversion ever attempted in U.S. history. The implementation will require the programming and installation of over 41,000 new computers and new electronic pollbooks, and integration with the current, maligned, voter registration system.

² Georgia Governor Signs Law Addressing Some Criticisms Of Contested 2018 Election <https://www.npr.org/2019/04/04/709911541/georgia-governor-signs-law-addressing-some-criticisms-of-contested-2018-election>.

³ There are serious internal conflicts within HB316, as Coalition has explained to Defendants in correspondence. *See* Exhibit 2. In addition, it is Coalition’s position that no BMD voting system with U.S. Elections Assistance Commission certification meets the requirements of HB316. *Id.*

Numerous questions about the viability of electronic BMD systems have been raised by cybersecurity and election auditing experts. On March 27, 2019, four U.S. Senators wrote the voting system vendors questioning the security and verifiability of BMD voting systems. Coalition forwarded a copy of the Senators' letter to Defendants' counsel. (See attached Exhibit 3).

B. HB316 Will Not Moot the Case

HB316 does not moot the case because the new BMD system will not be implemented until sometime during 2020, at the earliest, and will not cure the fundamental defects in Georgia's election system.

1. BMD System Implementation is Uncertain and Will Not Be Implemented Until 2020 at the Earliest

The case is not moot because the State's violation of Plaintiffs' constitutional rights will continue with the use of touchscreen DREs for the foreseeable future. Important elections occur almost every month in Georgia, many for State House and Senate special elections. For this reason, Plaintiffs continue to seek preliminary injunctive relief in the form of a transition to hand marked paper ballots, as used in the vast majority of polling places in the nation. The time pressures that faced the State when the Court denied injunctive relief in September, 2018, are no longer a factor: the State has ample time to switch to paper ballots for the upcoming important, but relatively small, elections. Most importantly, Plaintiffs' proposed solution, but not the DREs or BMDs, satisfies the

constitutional requirement of “transparent, fair, accurate, and verifiable election processes that guarantee each citizen’s fundamental right to cast an accountable vote.” 334 F. Supp. 3d at 1328.

2. HB316 Will Not Cure Defects

The touchscreen BMDs that the State intends to purchase pursuant to HB316 will *not* cure the fundamental defects in Georgia’s election system or address the Constitutional violations at issue. Like the touchscreen DRE machines, the proposed new BMD touchscreen voting system does not produce an accountable vote or auditable results, offers no improvement over the DRE system, and shares the DRE’s security flaws.

System accountability flaws can be explained briefly by considering the three voting systems involved in this case: hand marked paper ballots with optical scanner tabulation (the system long-proposed by Coalition); the touchscreen DREs that Georgia currently uses; and the touchscreen BMD system mandated by HB316. All three of these systems rely to some extent on computers, and the results therefore cannot be confirmed as accurate unless, in a post-election review (a recount or an audit), the reported results are compared to an independent record of the choices made by the voters.

Only hand marked paper ballots using optical scanners to tabulate votes allow an effective post-election audit to be accomplished by comparing the

reported election results to a statistically valid sample of the hand marked paper ballots themselves—the original source document of each voter’s transaction, *independent* of any electronic interpretation.

With DREs, meaningful recounts or post-election audits are impossible because voting on DREs leaves no independent or accountable record of voters’ choices. Touchscreen BMDs share the same security issues and operate similarly to touchscreen DREs, except that the BMD interprets the voter’s screen input onto a printed paper vote record, while the paperless DRE records the screen input directly into electronic memory. In both cases, a computer is between the voter and the ballot, and the voter cannot verify that the machine accurately recorded his or her vote. An effective post-election audit cannot be performed on BMD-generated results because the only records of voters’ choices (computer-generated barcodes, printed ballot summaries, or other similar printouts) are not independent of the electronic voting system software. Instead, they are unverified secondary records generated by computers—not by the voter.⁴ Both DREs and BMDs lack the required auditable paper record of the original vote cast.

Defendants’ position is that individual voters will have the opportunity to review the computer-generated paper record of their purported choices to confirm

⁴ Example of such barcodes and ballot selections list paper vote record are attached at Exhibit 4. In this example, the barcode is the actual cast vote counted, not the human-readable list of selections.

the machine's recording accuracy. But this will not create an *auditable* record. It is an unreasonable burden on voters to require them to undertake the difficult process to check the machine accuracy for a long and complex ballot. In addition, research shows that voluntary voter verification of computer-generated paper ballots is notoriously sporadic, unreliable and inaccurate and will not result in an adequately voter-verified record of the original transaction that can form the basis for a post-election audit. Auditing and voting systems experts conclude that most voters do not reliably, accurately or completely check the printed ballot summaries. Even if mistakes are detected, voters are often reluctant to report them.⁵

The result is that BMD election results, like DRE results, do not represent an accountable vote and cannot be audited. It is for this and other reasons that twenty-four leading election and cybersecurity experts wrote the State's SAFE Commission, urging the State not to purchase BMDs. *See* note 1, *supra*. The only cybersecurity expert on the SAFE Commission, Georgia Tech's Professor Wenke Lee, voted against purchasing BMDs, and urged the Commission to reject BMDs because of their insecure design and lack of auditability.

⁵ A distinct problem with BMDs is there is no "feedback mechanism"; there is no practical way of addressing reports of machine malfunction. If a voter reports a malfunctioning machine to a pollworker, there is no way for the pollworker to tell if the machine actually malfunctioned or the voter is simply mistaken or, even, if the voter is maliciously reporting non-existent errors to reduce the number of available machines in a given precinct.

C. Relief Sought

Coalition will be seeking to permanently enjoin the use of DREs and BMDs. Coalition will seek a preliminary injunction to enjoin the use of DREs until the hearing on the merits.

1. Preliminary Injunction--DREs

Coalition continues to seek the relief that they have sought since long before the mid-term elections:⁶ to enjoin Defendants to use hand marked paper ballots instead of the DREs. After this Court denied relief for the mid-term elections, Coalition filed a Motion for Additional Injunctive Relief [Doc. 327] seeking such relief for all elections after the November 2018 general election. Before Defendants' response to the Motion was due, this Court granted the Defendants' Motion to Stay Pending Appeal.

Coalition continues to seek the relief set forth in the Motion for Additional Injunctive Relief, as applied to future elections. That relief can be summarized as follows:⁷

- a) Conducting upcoming elections through at least 2020 using hand marked paper ballots designed, scanned, tabulated and reported by Georgia's currently owned GEMS Election Management System (currently used in all counties) together with the Accu-vote optical scanners (currently used in all counties) to be deployed in precincts or central count, at the counties' option;

⁶ See April 18, 2018 letter to Defendants' Counsel (which is attached to the letter that is attached as Exhibit 2).

⁷ Touchscreen BMDs, although flawed, may be the best available technology for some voters who require assistive technology in voting.

- b) Post-election audits of election results of all elections; and,
- c) Audits and correction of electronic pollbooks to reflect the most accurate official voter registration records and assure the proper security and operation of the pollbooks and related voter registration records to avoid voter disenfranchisement.

Plaintiffs anticipate promptly filing a Supplement to the Motion for Additional Injunctive Relief to update the Motion, but not materially change the relief sought.

2. Permanent Injunctive Relief

After expedited discovery is completed, Plaintiffs will seek to permanently enjoin the use of DREs and BMDs.

D. Expedited Discovery and Schedule

In its Order denying injunctive relief, the Court stated that, on remand, the Court would “insist on further proceedings moving on an expedited schedule.” *Curling*, 334 F. Supp. 3d at 1328. To expedite the schedule, it may be appropriate for the Court to appoint a U.S. Magistrate to oversee discovery. Though Coalition assumes that Defendants will engage in discovery in good faith, it is not unreasonable to anticipate difficulties arising with the necessary forensic examination of the State’s election systems. In addition, Coalition would request that Defendants (and Plaintiffs) be required to answer discovery within 14 days of receipt via email, rather than the standard 30 days. Further, given the four-month stay of proceedings to accommodate Defendants’ Eleventh Circuit appeal,

Coalition would urge that further motions practice not interfere with the discovery schedule.

At the Status Conference, Coalition will present the Court with a Proposed Scheduling Order with relevant dates and deadlines.

Respectfully submitted this 9th day of 2019.

/s/ Bruce P. Brown

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CERTIFICATE OF COMPLIANCE

I hereby certify that the foregoing document has been prepared in accordance with the font type and margin requirements of LR 5.1, using font type of Times New Roman and a point size of 14.

/s/ Bruce P. Brown

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CERTIFICATE OF SERVICE

This is to certify that I have this day caused the foregoing to be served upon all other parties in this action by via electronic delivery using the PACER-ECF system.

This 9TH day of April, 2019.

/s/ Bruce P. Brown

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February 18, 2019

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Re: HB316 and *Curling v. Raffensperger*

Dear Vincent and Bryan:

Initially, Cary, Rob and I look forward to working with you in this litigation. I'm writing with respect to our clients' views on the voting system provisions of the recently introduced HB316. To be clear: the electronic ballot marking devices ("BMDs") authorized by HB316 will not provide secure or auditable elections or resolve the issues raised in the litigation.

I have attached a letter from twenty-four of the nation's leading elections experts urging Georgia in the strongest possible terms not to deploy BMD's because they do not create election results that can be tested or audited. As the letter states: "BMDs share the pervasive security vulnerabilities found in all electronic voting systems, including the insecure, paperless DREs in current use statewide." In addition, "voter verification" of a BMD-market ballot is unreliable and sporadic, rendering elections conducted with BMD's "unauditable."

In her September 17 ruling in this case, Judge Totenberg wrote:

Transparency and accountability are, at the very least, essential to addressing the significant issues that underlie this case.

Vincent Russo and Bryan Tyson
February 18, 2019
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Curling v. Kemp, 334 F. Supp. 3d 1303, 1307 (N.D. Ga. 2018). HB316 provides neither basic transparency or accountability in a voting system. Her opinion further explained:

Suffice it to say, at this juncture, that national-and state-commissioned research-based studies by cybersecurity computer scientists and elections experts consistently indicate that an independent record of an elector's physical ballot is essential as a reliable audit confirmation tool.

334 F. Supp. 3d at 1309. As Professor Philip Stark, the nation's leading expert in post-election auditing, has warned, the proposed electronic BMDs do not provide an independent record that can serve as a "reliable audit confirmation tool."

Judge Totenberg concluded her decision as follows:

If a new balloting system is to be launched in Georgia in an effective manner, it should address democracy's critical need for transparent, fair, accurate, and verifiable election processes that guarantee each citizen's fundamental right to cast an accountable vote.

334 F. Supp. 3d at 1328. The experts agree that BMDs accomplish none of the essential needs that Judge Totenberg articulates, and that our litigation seeks.

We allege in the Third Amended Complaint that requiring touchscreen DREs "violates the voters' constitutional rights to have their votes recorded in a fair, precise, verifiable, and anonymous manner, and to have their votes counted and reported in an accurate, auditable, legal, and transparent process." The similar electronic touchscreen process of BMD voting has the same problems for the same fundamental reasons.

The electronic BMD provisions of this year's HB316 are almost identical to the electronic BMD provisions of last year's 2018-SB403, which the legislature wisely defeated. We alleged in the Third Amended Complaint that last year's SB403 "failed to address what is required to remedy the problem":

Crucially, though its proponents called the bill a "paper ballot" bill, SB403 did not require hand-marked auditable paper ballots. Instead, SB403 sought to authorize a new type of unverifiable electronic voting system technology that, while favored by Defendant Secretary of State Brian Kemp and the bill's sponsors, was roundly criticized by experts as an insecure, dangerously hackable, high-risk technology.

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Third Amended Complaint, ¶ 12. The electronic BMD provisions of 2018-SB403 and 2019-HB316 are almost identical and neither begin to solve the problems identified in our lawsuit.

Additionally, although little has been said to date about our allegations of the violation of secret ballot constitutional guarantees, our clients and their experts are concerned that the systems under current consideration may include the ability to connect the voter to his ballot either at the scanner level cast vote record or at the BMD level printer, depending on which vendors' equipment is selected. We urge the Secretary's office and the State Board of Elections to fully explore the technology used in multiple components of systems under consideration to ensure that the anonymity of the ballot cannot be compromised.

In addition to multiple other allegations and portions of our claims, our plaintiffs sought relief "requiring the conduct in each case of post-election audits of paper ballots to verify the results reported by the tabulation machines." The paper ballots that are produced by the proposed BMD systems cannot be audited to verify the reported results.

We urge you to use your influence to persuade legislators to reject HB316 because it not good for Georgia voters (or taxpayers) and will not cure the constitutional deficiencies identified in the Third Amended Complaint.

Please let me know if you have questions or would like to discuss these issues.

Sincerely,



Bruce P. Brown

cc: Cary Ichter
Robert A. McGuire
David D. Cross
Halsey G. Knapp
Kaye Burwell

January 7, 2019

The Honorable Robyn Crittenden
Secretary of State Elect Brad Raffensperger
Rep. Barry Fleming
Members of the SAFE Commission
214 State Capitol
Atlanta, Georgia 30334 (via e-mail)

Dear Secretary Crittenden, Secretary Elect Raffensperger, and SAFE Commission Members:

We write to urge you to follow the advice of election security experts nationwide, including the National Academies of Sciences, the Verified Voting Foundation, Freedomworks, the National Election Defense Coalition, cyber security expert and Commission member Professor Wenke Lee, and the many states that are abandoning vulnerable touchscreen electronic voting machines in favor of hand-marked paper ballots as the best method for recording votes in public elections.

Our strong recommendation is to reject computerized ballot marking devices (BMDs) as an option for Georgia's voting system, except when needed to accommodate voters with disabilities that prevent them from hand-marking paper ballots. Hand-marked paper ballots, scanned by modern optical scanners and used in conjunction with risk-limiting post-election audits of election results, should be the standard balloting method statewide.

Although they are expensive and complex devices, computerized ballot markers perform a relatively simple function: recording voter intent on a paper ballot. Since there are no objective, quantitative studies of their benefits, acquiring BMDs for widespread use risks burdening Georgia taxpayers with unnecessary costs. Furthermore, BMDs share the pervasive security vulnerabilities found in all electronic voting systems, including the insecure, paperless DREs in current use statewide. These reasons alone should disqualify BMDs from widespread use in Georgia's elections, especially since there is a better alternative.

Hand-marked paper ballots constitute a safer and less expensive method of casting votes. Hand-marked paper ballots offer better voter verification than can be achieved with a computerized interface. A paper ballot that is indelibly marked by hand and physically secured from the moment of casting is the most reliable record of voter intent. A hand-marked paper ballot is the only kind of record not vulnerable to software errors, configuration errors, or hacking.

The SAFE Commission has heard testimony about voter errors in marking paper ballots and the susceptibility of paper ballots to tampering or theft. No method of balloting is perfect, but vulnerabilities in computerized marking devices, if exploited by hackers or unchecked by bad system designs, raise the specter of large-scale, jurisdiction-wide failures that change election outcomes. For example, with hand-marked paper ballots, voters are responsible only for their own mistakes. On the other hand, voters who use BMDs are responsible not only for

their own mistakes but also for catching and correcting errors or alterations made by a BMD which marks ballots for hundreds of voters. For this reason, well-designed hand-marked paper ballots combined with risk-limiting post-election tabulation audits is the gold standard for ensuring that reported election results accurately reflect the will of the people.

Voter verification of a BMD-market ballot is the principle means of guarding against software errors that alter ballot choices. Many BMDs present a ballot summary card to the voter for verification. The 2018 National Academies of Science, Engineering and Medicine Consensus Report *Securing the Votes: Protecting American Democracy*, which represents the nation's best scientific understanding of election security and integrity, states: "Unless a voter takes notes while voting, BMDs that print only selections with abbreviated names/descriptions of the contests are virtually unusable for verifying voter intent." Although advocates of touchscreen ballot marking devices claim that the human readable text ballot summary cards are "voter verifiable," the contrary is true: voter verified summary cards that contain errors (whether induced by hacking or by design flaws) are likely to be mistakenly cast, making a valid audit impossible. A post-election audit requires a valid source document, either marked directly by the voter or voter verified. Since voter verification of printed ballot summary cards (the source document) is sporadic and unreliable, elections conducted with most ballot marking devices are unauditable.

While you may have been told that touchscreen systems are more "modern" devices, many of your peers and most election security experts have found this appeal to be based on a mistaken view that the voting public will naively accept new technology as a "step forward." We are intimately familiar with the hidden costs, risks, and complexity of these new technologies. We can assure you there is objective scientific and technical evidence supporting the accuracy of traditional, easily implemented scanned and audited hand-marked paper ballot systems. We urge you to recommend such a system as the safest, most cost-effective, and transparent way of conducting future elections.

If we can be of help in providing more information, we hope you will feel free to call upon us.

Sincerely,

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March 24, 2019

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Re: HB316 and *Curling v. Raffensperger*, No. 17-CV-02989-AT (N.D. Ga.)

Dear Vincent and Bryan:

The purpose of this letter is to restate our demand communicated in our letter of April 16, 2018 (copy attached as Exhibit A), that your clients Secretary of State Brad Raffensperger and State Election Board Members David J. Worley, Rebecca N. Sullivan, Ralph F. Simpson, and Seth Harp (the “Election Board”) exercise their power, authority and responsibilities under Georgia law and the United States Constitution to conduct the upcoming 2019 and 2020 elections using hand-marked paper ballots and employing statistically valid post-election audits in all such elections. We also wish to supplement our objections stated in our letter of February 18, 2019 (copy attached as Exhibit B) to the un-auditable electronic ballot marking devices contemplated by the HB316, recently passed by the General Assembly.¹ HB316 is not a realistic or legally viable solution to Georgia’s DRE voting system security flaws and does not address the issues in the *Curling v Raffensperger* case.

It is a fair reading of Judge Totenberg’s September 17, 2018 Order that the Secretary would have been enjoined to use hand-marked paper ballots in the November 2018 election had there been more time to change from the DRE machines. *Curling v. Kemp*, 334 F. Supp. 3d 1303, 1327 (N.D. Ga. 2018). With the 2018 midterms finalized in

¹See <http://www.legis.ga.gov/Legislation/20192020/184671.pdf>.

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March 24, 2019

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December, the Secretary continues to have the time and, given the vulnerability of the DRE machines, the duty to replace the DREs with hand-marked paper ballots. The change to a reliable and verifiable voting system cannot wait until a totally new system is deployed in 2020 (or, realistically, far beyond); there continue to be important elections in Georgia almost every month in 2019². As explained below, the new system contemplated by HB316, is fatally flawed in numerous constitutional and statutory respects. It is imperative that the State immediately deploy the voting method that is the modern standard in the country-- hand-marked paper ballots with precinct scanning and statistically valid post-election audits.

A. HB316 Does Not Address the Fundamental Issues raised in our Third Amended Complaint or in Judge Totenberg's September 2018 ruling.

As stated in our February 18, 2019 letter, electronic voting on Ballot Marking Devices ("BMDs") is merely an updated and unproven version of electronic voting on DREs. According to virtually every qualified expert in the field, BMDs are at least as vulnerable to undetected error or attack as the insecure DRE system. As we have previously stated, the paper printout ballot generated by BMDs are generally unverifiable and unverified by the voter, and the results the system produces are not auditable.

We intend to challenge the BMDs as an unconstitutional infringement on a citizen's right to vote and have the vote counted accurately. As stated in Count I of Coalition's Third Amended Complaint (Doc 226, ¶169):

Inherent in individuals' fundamental right to vote is the right to participate in a trustworthy and verifiable election process that safely, accurately, and reliably records and counts all votes cast and that produces a reliable election result capable of being verified as true in a recount or election contest.

BMDs as a class of election machines simply cannot meet these basic requirements, and the particular systems that are certified by the U.S. Election

² There have been special elections in January, February, March 2019, and more are scheduled for April 2019 and beyond.

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Assistance Commission (“EAC”) and likely to respond to Georgia’s Request for Proposal (“the RFP”) are deficient in multiple respects. There are five EAC certified systems.³

- a) ES&S ExpressVote;
- b) Dominion ImageCast X;
- c) Unisyn FreedomVote;
- d) Hart Verity Duo (certified March 18, 2019); and
- e) Clear Ballot Clear Access (certified March 19, 2019).

As you may know, three of the EAC-certified BMDs under consideration for purchase by Georgia (ES&S, Dominion and Unisyn) convert the voter’s selection on the screen to a barcode and it is the barcode that is printed on the printed vote record (“the paper ballot”) and then fed into the scanner by the voter. Although the printed vote record also includes human-readable information that is supposed to show the votes cast by the voter, it is the barcode (not readable by the voter) that is read and counted by the scanner and the basis for the ultimate tabulation of the votes.

The fourth system, Hart, works similarly, but rather than tabulating barcodes, a human readable list of selections is printed and read by the scanner, interpreted into votes, and tabulated. The fifth system’s BMD, Clear Ballot Access, prints the voter’s selection onto a regular full face paper ballot with bubbles colored in by candidate names, and tallies the votes upon optical scanning of the bubble marks.

Not one of these five systems produces an auditable result. As we explained in our February 18, 2019 letter, auditing and voting system experts are in virtually unanimous agreement that in most elections, electors are unable to verify that the machine has printed the ballot content or votes selected with 100% accuracy. Ballots are simply too long and too complex for voters to reliably detect errors in the printout of the “official paper ballot” record. For example, voters are not likely to detect if down-ballot races, or numerous referenda, are left off the paper printout, or if their votes were switched between “Yes” and “No.” In addition, most voters, having already spent the time voting on the machine, do not undertake the tedious additional step of verifying that the machine has recorded the voter’s selections correctly or completely. Further,

³ For an explanation of the product offerings in the BMD category, see https://trustthevote.org/wp-content/uploads/2019/02/14Jan_PrinciplesGuidelinesForPVR-v4.5.pdf, page 14.

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realistic and effective procedures to identify and address faulty machines in the polling place are unlikely to be developed.

Even if these severe problems with voter verification and auditing could be overcome, there is no practical way for pollworkers to respond to a voter's report that a machine made an error in recording a vote. For example, a pollworker cannot ask to see the voter's ballot or other evidence of the alleged error, without violating statutory secret ballot protections. Having no means of verifying the error, the pollworker must either ignore the risk of continuing to operate a misprogrammed BMD, or accept the voters' word and remove the machine from service. Even a small number of incorrect (or malicious) error reports could lead to long lines and disenfranchisement of voters.

It is for these reasons that the only expert on the SAFE Commission voted against the SAFE Commission's recommendation to deploy BMDs⁴ and the inventor of risk limiting audits and the nation's foremost expert on post-election auditing, Professor Philip Stark, concludes that audits of BMD-generated results are "meaningless."⁵ Twenty-four leading voting systems experts, cybersecurity experts, and election quality leaders echoed this concern in a letter to the SAFE Commission, noting that a valid BMD audit is "impossible."⁶ Further, the National Academy of Sciences warned: "Unless a voter takes notes while voting, BMDs that print only selections with abbreviated names/descriptions of the contests are virtually unusable for verifying voter intent."⁷ We are unaware of any independent qualified expert who disagrees with the near universal conclusion that current-generation BMDs should not be used as the standard method of voting. We acknowledge BMDs may be the best (although still inadequate) currently available choice for voters with disabilities who need electronic assistance in voting, and the best available accessible units should be installed in each polling place.

⁴ <https://www.linkedin.com/pulse/why-computer-scientists-prefer-paper-ballots-wenke-lee>

⁵ <https://coalitionforgoodgovernance.sharefile.com/d-sd71f31ae0914ac8a>

⁶ <https://coalitionforgoodgovernance.sharefile.com/d-s4fd23d23d9e44c5b>

⁷ Securing the Vote: Protecting American Democracy, at 79,;
https://www.nap.edu/login.php?record_id=25120&page=https%3A%2F%2Fwww.nap.edu%2Fdownload%2F25120

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Because the BMDs do not produce auditable “accountable” election results, their use violates the U.S. Constitution. As Judge Totenberg stated in her September 17, 2018 ruling:

If a new balloting system is to be launched in Georgia in an effective manner, it should address democracy’s critical need for transparent, fair, accurate, and verifiable election processes that guarantee each citizen’s fundamental right to cast an accountable vote.

Curling, 334 F. Supp. 3d at 1328.

B. The Barcode Systems Do Not Even Comply with HB316

It should go without saying that requiring a voter to cast a barcoded vote that they cannot read or know the meaning of is an impermissible burdening of the right to vote. In addition to not meeting U.S. Constitutional requirements, the three systems that use bar codes (ES&S, Dominion and Unisys) do not even comply with a number of the specific provisions of HB316.

1. *Official results not “elector verifiable” or “readable by the elector”*

HB316 provides:

7.1. ‘Electronic ballot marker’ means an electronic device that does not compute or retain votes; may integrate components such as a ballot scanner, printer, touch screen monitor, audio output, and a navigational keypad; and uses electronic technology to independently and privately mark a paper ballot at the direction of an elector, interpret ballot selections, communicate such interpretation for elector verification, and print an elector verifiable paper ballot.

The barcoded votes on the “paper ballot” are not, of course, “elector verifiable.” Though these three systems also print what the vendors say is a human readable recapitulation of the voter’s selections, that information does not constitute the “ballot” or “vote” that will be counted; it is the barcode that the scanners read as the official vote cast. The voter, however, has no way of knowing what the barcode says. The barcode may be coded incorrectly or coded correctly on the touchscreen and then miscoded at the scanner where the vote is cast.

The use of barcodes further runs afoul of Sections 18 and 19 of HB316 which, together, require the official ballot governing the result to be in a format “readable by the elector.” HB316 Section 18 (lines 378-380) states that the “electronic ballot markers shall produce paper ballots which are marked with the

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elector's choices in a format readable by the electors." HB316 Section 19 (lines 558-561) states that such paper ballot "printed by the electronic ballot marker shall constitute the official ballot *and* shall be used for, and govern the result in, any recount conducted pursuant to Section 21-2-495 and any audit conducted pursuant to Section 21-2-498." The fatal problem with the three systems (ES&S, Dominion and Unisyn) which use barcodes is that the portion of the ballot that is "readable by the elector" is *not* the ballot that is tabulated or that governs *any* result at any stage of ballot processing.

2. Official results cannot be "manually inspected"

The use of barcodes also is inconsistent with HB316 Section 42 (lines 1232-1233), which states: "Audits performed under this Code section shall be conducted by *manual inspection* of random samples of paper official ballots." (Emphasis added). But the barcodes on the "paper official ballots" determine the results to be audited, and they cannot be manually inspected.

3. Systems Improperly "retain votes"

Section 7.1 of HB316 bill appropriately prohibits BMDs that "compute or retain votes." The BMDs offered by Dominion and ES&S, however, have the capacity to retain votes and tabulate votes. This "auto-cast" capacity has been dubbed "permission to cheat" by the voting system computer scientists because one operational setting allows the unit to cast votes directly from the touchscreen unit without printing a ballot for verification, much like DREs.⁸ An additional prohibited capability is the setting using the "all-in-one" BMD as a scanner for vote capture, where after the voter reviews his machine-printed paper ballot, the voter casts his ballot into the BMD scanner slot rather than a stand-alone optical scanner.⁹ The all-in-one machine combines the scanner and printer path, permitting additional unauthorized marks to be made by the printer onto the paper ballot, unseen by the voter after he has cast this ballot into the scanner slot. This is the technology and security flaw that is causing the NY Board of Elections to consider decertification of the use of this technology in the Dominion BMD.¹⁰

⁸<https://freedom-to-tinker.com/2018/09/14/serious-design-flaw-in-ess-expressvote-touchscreen-permission-to-cheat/>

⁹ <https://freedom-to-tinker.com/2019/03/08/reexamination-of-an-all-in-one-voting-machine/>

¹⁰The system that is under investigation in New York uses the same technology as ES&S' ExpressVote BMD. <https://s3.amazonaws.com/ftt-uploads/wp-content/uploads/2019/03/07164530/190307-Kellner-memo-Dominion-ICE.pdf>;

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4. Violation of Secret Ballot Requirement

The scanners used by ES&S (and probably other vendors) violate Georgia's secret ballot laws and HB316. The Georgia Constitution states: "Elections by the people shall be by secret ballot." (Ga. Const. Art. II, § 1, ¶ I). Section 26 (line 533) of HB316, requires that ballot marking devices "[p]ermit voting in absolute secrecy so that no person can see or know any other elector's votes." *See also* O.C.G.A. § 21-2-365(6) (scanning systems "shall permit voting in absolute secrecy").

ES&S DS200 scanners capture timestamps on each ballot record at the time the voter casts the ballot. The order of voters casting their ballots in the polling place can easily be determined by poll workers, poll watchers, security video surveillance, other voters, the public observing the election, and commercial data collectors. Insiders with access to the internal memory records of the optical scanners can connect a voter with his ballot. That information can be illicitly sold or abused to violate the voters' constitutional right to an absolutely secret ballot. While some vendors claim to "anonymize" reported ballot data by changing the timestamps for external reports when the data is exported to public records, the original electronic records containing the timestamp and chronological order of ballots cast can continue to be accessed by insiders and successful hackers.

Coalition Plaintiff's Third Amended Complaint includes a claim for the violation of voters' right to cast an absolutely secret ballot. The scanners incorporated in some of the BMD voting systems under consideration violate Georgia's requirement of "absolute secrecy" in voting.

In sum, these conflicts between HB316, which clearly contemplates the use of BMDs, and the realities of how these unproven electronic systems operate, underscore how ill-served Georgia citizens will be if these systems are ever purchased, particularly given their outrageous cost and the availability of much more economical and superior alternatives.

C. The "Gold Standard" Alternative: Paper Ballots, Precinct Scanning and Proper Audits

In her September 17, 2018 Order, Judge Totenburg stated: "the Court advises the Defendants that further delay is not tolerable in their confronting and tackling the challenges before the State's election balloting system." *Curling*, 334 F. Supp. at 1303. As we have communicated for almost two years and demanded again in April, 2018, the

<https://www.lohud.com/story/news/local/westchester/2019/03/08/hackers-voting-machines-imagecast-evolution/3078807002/>.

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State has an inexpensive and fully verifiable “gold standard” system immediately available at minimal cost, with no delays: hand marked paper ballots, scanned by the State’s Diebold Accu-vote Optical Scanners, and tabulated by the GEMS servers currently in use.

What the Coalition Plaintiffs demand is *the standard method* of voting in this country. We estimate that across the nation, approximately 112,000 precincts covering 132 million registered voters use hand-marked paper ballots with precinct scanners of the type we recommend be deployed into immediate service in Georgia. The specific optical scan equipment currently owned by Georgia is successfully used in over 11,300 precincts serving 13 million voters across the country. This method uses equipment that Georgia officials already use in every election in every county election office. In addition, there are hundreds of experienced election administrators across the country who can provide assistance if needed in making this transition. We particularly emphasize and recommend precinct scanning of paper ballots as explained on page 4 of the April 16, 2018 letter. It is the most secure and widely accepted method of balloting.

Expanding the inventory of optical scanners sufficient to supply every polling place immediately would likely cost less than \$200,000 and serve the state well for several years to come while the State selects and employs a new auditable balloting system.

Even if the BMDs did not have all the design and security problems described above, a system conversion on this scale with 40,000 pieces of unproven computer equipment and new programs in 159 counties with limited information technology staff during a presidential election year is irresponsible, unrealistic, unworkable, and a recipe for a chaotic 2020 election cycle and system failures. We demand a more secure and responsible transition that is immediately available to Georgia—the interim use of hand-marked paper ballots and the currently owned and operational Diebold Accu-vote optical scan system.

As you know, any voting system computer can be misprogrammed or hacked, and must be auditable to provide credible election results. Post-election audits are the only method of assuring that the results as reported are credible and accurate. In the Third Amended Complaint and in the Motion for Additional Injunctive Relief [Doc. 372, page 2], Coalition Plaintiffs request that the Court require post-election audits of results of paper ballot elections. Such audits should commence immediately with rules to be promulgated by the Election Board.

Further, we renew our demand that the Secretary of State take all measures to audit the voter registration database and electronic pollbooks to reconcile discrepancies and eliminate all errors that created voter disenfranchisement and polling place confusion in November 2018 and have the continuing potential to do so.

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Please let me know if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Bruce P. Brown', with a stylized, cursive script.

Bruce P. Brown

cc: Marilyn R. Marks
Robert A. McGuire
Cary Ichter
Kaye Woodard Burwell
Halsey G. Knapp
David D. Cross
Catherine L. Chapple

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Bruce P. Brown

Law

April 16, 2018

By Email

Roy E. Barnes
John F. Salter
Barnes Law Group, LLC
31 Atlanta Street
Marietta, GA 30060

Re: *Curling, et al. v. Kemp, et al.*, No. 17-CV-02989-AT (N.D. Ga.)

Dear Governor Barnes and Mr. Salter:

Together with Robert McGuire, Cary Ichter and William Ney, I represent the Coalition for Good Governance, Laura Digges, William Digges III, Ricardo Davis and Megan Missett (“the Coalition Plaintiffs”) in the above-styled litigation. The purpose of this letter is to make another urgent demand upon your clients Brian P. Kemp, the Secretary of State of Georgia, and Georgia State Election Board Members David J. Worley, Rebecca N. Sullivan, Ralph F. Simpson, and Seth Harp (the “State Election Board”). Specifically, the Coalition Plaintiffs demand that Secretary Kemp and the Election Board exercise their power, authority and responsibilities under Georgia law and the United States Constitution to conduct the upcoming 2018 elections involving federal and state offices, specifically the May 22, 2018 primary election, any resulting July 24, 2018 runoff elections, and the November 6, 2018 elections, and any special elections, using hand-marked paper ballots in lieu of the Direct Recording Electronic (“DRE”) machines.

The unreliability, unverifiability and vulnerability of Georgia’s DRE systems is the subject of daily local and national news reports and continuing warnings from federal agencies, such as the Department of Homeland Security, the Election Assistance Commission, and the Federal Bureau of Investigation. As recently as last month, the U.S. Senate Select Committee on Intelligence renewed its warnings concerning the unacceptable risks of paperless electronic voting systems of the type Georgia uses. We need not repeat here the many warnings from the authorities and private sector experts concerning the urgent need to decommission Georgia’s DRE machines in favor of paper ballots.

As the Coalition Plaintiffs have explained in detail in their Proposed Third Amended Complaint, filed on April 4, 2018, because Georgia’s DRE touchscreen voting machines are insecure, lack a voter verified paper audit capacity, fail to meet minimum statutory requirements, and deprive in-person voters of the ability to cast a secret ballot

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as guaranteed by Ga. Const. Art. II, § 1, ¶ 1, requiring in-person voters to use those machines violates the voters' constitutional rights to have their votes recorded in a fair, precise, verifiable, and anonymous manner, and to have their votes counted and reported in an accurate, auditable, legal, and transparent process.

“The right to vote freely for the candidate of one's choice is of the essence of a democratic society, and any restrictions on that right strike at the heart of representative government.” *Reynolds v. Sims*, 377 U.S. 533, 555 (1964). The secret ballot—“the hard-won right to vote one's conscience without fear of retaliation”—is a cornerstone of this right to freely vote for one's electoral choices. *McIntyre v. Ohio Elections Comm'n*, 514 U.S. 334, 343 (1995).

In their Proposed Third Amended Complaint, the Coalition Plaintiffs have explained in detail the factual and legal basis for their claims for injunctive relief. The Coalition Plaintiffs again urge the Secretary and the State Election Board to take immediate remedial action to protect the 2018 elections by requiring the statewide use of hand-marked paper ballots. As explained below, the Secretary and the State Election Board have the statutory authority to take this remedial action, and have feasible, economic and practical means for replacing DREs machines with paper-ballot voting immediately.

The Coalition and its supporters have made these or similar demands repeatedly over the past eleven months, and they are made again here with renewed urgency.

A. Statutory Authority

The Secretary stated in his Brief Supporting the State's Motion to Dismiss that he has the “discretionary authority to choose voting equipment for counties.” (Doc. 83-1 at 20, 21). Indeed, the Secretary and the State Board have selected, and the State has provided, both DRE voting machines and paper ballot optical scanners for every county in Georgia.

Paper ballots have been an authorized form of voting under Georgia law continuously for over 240 years. (Article IX Georgia Constitution of 1777). Paperless mechanical lever voting machines were first permitted in approximately 1930 and optical scanners were authorized for the counting of paper ballots by 1981. (See O.C.G.A. §§ 21-2-280). DRE machines were first permitted in 2002. Ga. L. 2002, p. 598; Ga. L. 2003, p. 517. None of these laws authorizing mechanical or electronic voting systems, however, required their use or supplanted the authority to use hand-counted or electronically counted paper ballots.¹

¹ Indeed, numerous Georgia statutes authorize, require or contemplate the use of paper ballots today. See, e.g., O.C.G.A. § 21-2-280; § 21-2-281; § 21-2-366; and § 21-2-4-483.

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O.C.G.A. § 21-2-379.3 permitted Georgia's first use of DRE voting systems in 2002 and required that the Secretary of State provide DRE equipment to all counties, after funds were appropriated by the General Assembly. The law, however, does not mandate their use. In fact, the State provided both DREs and optical scanning equipment for paper ballots. Further, counties retain the statutory authority to use optical scanning equipment to scan and count paper ballots, and absentee mail-in and provisional ballots.

In addition, under O.C.G.A. § 21-2-379.2, the Secretary has the authority to revoke his approval of a DRE voting system if he re-examines the system and determines that it "can no longer be safely or accurately used by electors at primaries or elections . . . because of any problem concerning its ability to accurately record or tabulate votes." An examination of the evidence and undisputed academic research would require such a finding and a wholesale revocation of Georgia's DREs. However, given the underlying statutory authority to use paper ballots (either hand-counted or counted by optical scan equipment), and the absence of any state law requiring use of DREs, the replacement of the DREs in lieu of paper ballots does not require the Secretary to invoke O.C.G.A. § 21-2-379.2.

It is true that on April 17, 2005, the State Election Board promulgated Rule 183-1-12-.01 which requires the use of DREs for in-person voting for county, state and federal elections. In doing so, the State Election Board clearly exceeded its authority under Georgia law, which does not require DREs to be used and explicitly allows the use of paper ballots. The General Assembly has charged the State Election Board to promulgate rules to ensure the "legality and purity in all primaries and elections." O.C.G.A. § 21-2-31. Given the overwhelming evidence that the DREs are not reliable or secure, and cannot comply with the operational and security requirements of O.C.G.A. § 21-2-379.1 *et seq.*,² the Election Board has the statutory duty to repeal Rule 183-1-12-.01 immediately, and can do so on an emergency basis. In any event, the Board's Rule provides no defense to the mandates of state and federal law.

In sum, the Secretary and the State Election Board have the clear statutory authority and duty to discontinue the DRE voting systems and to order the use of hand-marked paper ballots.

B. Practical and Feasible Means for Using Paper Ballots

² See Second Amended Complaint ¶¶ 110-121 for details.

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There are at least three feasible methods of conducting paper ballot elections in 2018. Each county board of elections should be permitted to choose the paper ballot system that best suits local needs for conducting a secure election in their jurisdiction.

1. Precinct optical scanning of paper ballots

- (i) Method: voters hand-mark paper ballots and insert the ballots into the Accu-Vote OS optical scanners of the type currently in use for paper ballots. Votes are tabulated by the optical scanners at the polling location after polls close, and the tabulated results are posted on the door of the polling place. Then, the tabulated results are securely transported from the polling location to the county election office by hand delivery of the memory cards and results tapes along with all balloting materials. Unofficial results can be immediately emailed from the polling place to the county election office using digital photos of the results tapes, while county officials await the election night hand delivery of the secured original records.
- (ii) Statutory authority: O.C.G.A. §21-2-483(a). This is the best overall solution, and is the method that Georgia used prior to the 2002 implementation of the DREs. Specific procedures are provided in Title 21, Chapter 2, Article 11 Part 5, and security requirements can be updated and strengthened by promulgation of Election Board Rules.

2. Central count optical scanning of paper ballots

- (i) Method: voters hand-mark paper ballots and cast them into traditional secured ballot boxes at the polling locations. After polls close, the locked boxes are securely transported to the county elections office for ballot counting and reporting using the currently-owned and state-approved Accu-Vote OS scanners. Vote totals for each precinct and the county would be consolidated by the county Elections Department and reported to the public and the Secretary of State using the current GEMS election management system. Although “precinct scan” (described in 1 above) is preferable from a security perspective, the central count method may be temporarily attractive to counties that are concerned about training enough precinct workers to use one scanner

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in each polling place.

- (ii) Statutory authority: O.C.G.A. § 21-2-483(a). Specific procedures are provided in Title 21, Chapter 2, Article 11 Part 5, and security requirements can be updated and strengthened by promulgation of Election Board Rules

3. Traditional hand-counted paper ballots

- (i) Method: Voters hand-mark paper ballots, casting them in a traditional secured ballot box. The ballots are manually counted by teams of poll workers in the neighborhood precincts, typically within two hours of the closing of the polls. Unofficial results could be immediately transmitted by an emailed digital photo of the precinct tally sheets, to be immediately followed by Election Night hand delivery of the secured original tally sheets, ballots, and election records to the county Election Board. This is an easily implementable alternative, particularly for the May and July primaries in smaller population counties.
- (ii) Statutory authority: O.C.G.A. § 21-2-280. Numerous Georgia municipalities employ hand counted paper ballots routinely for all municipal elections with detailed procedures are provided by Title 21, Chapter 2, Article 11, Part 2.

In addition, in jurisdictions where optical scan equipment is used, and given the well-documented security risks associated with the Accu-Vote OS and GEMS election management system, it is imperative that, prior to programming for the 2018 elections, such components be thoroughly disinfected and determined to be free from any unauthorized software code. Trusted build copies of the approved software must be reinstalled on all machines after the machines have been fully examined or replaced. It is also imperative that robust post-election audits of the unofficial results be completed before the election results are certified.

The State has the equipment, supplies, software licenses and know-how necessary for all of these three alternatives. The paper ballots needed for these methods are already required to be printed for each precinct for use as mail-in ballots and provisional ballots. The counties merely need to increase the number of paper ballots ordered. A larger paper ballot print order will be a minimal cost, particularly when

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compared to the cost of moving, storing, securing and setting up and taking down the DRE equipment.

As for the scanning equipment: the state owns approximately 1,000 Accu-Vote OS optical scanners used for counting mail-in and provisional ballots. The number of additional scanners needed, if any, will depend on which of the three methods various counties select. If additional scanners are required, other states and vendors have hundreds of surplus Accu-Vote OS machines that can be borrowed or rented inexpensively. Georgia already licenses and uses the software necessary for deployment of either of the optical scan methods, and election personnel in the county offices are already trained on the necessary equipment.

C. Sufficient Time Before Elections to Address the Problems

As you know, over the past eleven months, the Coalition Plaintiffs and other Coalition members have initiated numerous requests to Secretary Kemp and State Election Board Members to abandon the non-compliant DRE system and convert to paper ballots to ensure the security of Georgia's elections.³

Though these warnings and requests have not been heeded, there is still enough time to implement reasonable interim remedies. Virginia was faced with a similar election security issue in 2017. On September 8, 2017, Virginia's State Board of Elections decertified all DREs in the state because of concerns about the integrity of DRE voting systems.⁴ Within two months, on November 7, 2017, twenty-two Virginia

³Prior notices and demands include the following: May, 2017 Change.org citizens petition to use paper ballots for the June 20, 2017 6th Congressional District runoff election (see emails directed to T. Fleming in Secretary of State's Office); May 10, 2017 Georgia voters' request that Secretary Kemp re-examine the DRE voting system under the provisions of O.C.G.A. § 21-2-379.2, with technical documentation supporting the necessity of halting the use of the DRE system (see May 10, 2017 email to T. Fleming and W. Harvey of SOS office); May 17, 2017 Georgia voters' follow up request for re-examination of DRE voting system with additional supporting technical documentation of inadequate system security (see May 17, 2017 email to T. Fleming); May 19 and June 2, 2017 Georgia voters' additional follow-up requests for response on DRE system re-examination prior to June 20, 2017 election (see emails to T. Fleming); May 25, 2017 complaint and motion for temporary restraining order to prohibit the use of the DRE voting system and to require use of paper ballots in the June 20, 2017 runoff election (Fulton County Superior Court, Case No. 2017CV290630); July 3, 2017 litigation to challenge the use of DRE voting systems in Georgia (N.D. Ga., Case No. 17-cv-02989).

⁴<https://www.elections.virginia.gov/Files/Media/Agendas/2017/SBEResolutiondecertifyingDREs09-08-17.pdf>

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counties had immediately and successfully converted to hand-marked paper ballots. In the case of Georgia, Coalition's demands alone have been outstanding for eleven months, giving officials more than adequate time to prepare for hand-marked paper ballot elections. Additionally, officials in the Secretary of State's office have acknowledged the compromised nature of the voting system since its reporting of the August 24, 2016 breach at Center for Election Systems, and no material action has been taken to mitigate the impact of the security failures on voting system components.

Though the above methods cure the constitutional and statutory infirmities that plague the current system, and would greatly enhance voter confidence, the State should consider in due course the best long-term hand-marked paper ballot technology. Temporarily using the currently owned Accu-Vote OS paper ballot system, and hand counts for smaller counties, will permit a more deliberate and phased-in adoption and implementation of a new paper ballot voting system, without undue time pressures driven by the urgent need to decommission the DRE units.

D. Audit of Voter Registration Database

It is undisputed that the State's entire voter registration database including Personally Identifiable Information ("PII") for over 6.5 million voters was unprotected and available on the Center for Election System server to anyone with an internet connection from at least August 24, 2016 until at least March 3, 2017. Additionally, on April 15, 2017, equipment and memory cards containing the entire state voter registration database, also including PII, was stolen and not recovered. Such exposure permitted almost unlimited opportunities for malicious actors to alter voters' registrations including eligibility for voting in certain contests. Voters whose data was disclosed have not been notified of this inappropriate disclosure despite the legal requirement to do so under O.C.G.A § 10-1-912. *See Second Amended Complaint ¶¶ 146-153.*

Further, Fulton County officials have acknowledged that there are "glitches" in the voter registration database programs that can cause voters to be disenfranchised, such as Fulton voter Brian Blosser. *See Proposed Third Amended Complaint ¶ 152.*

The November 6, 2018 general election is the first statewide general election scheduled after the data breaches and data theft were reported. The voter registration database should be responsibly and independently audited in advance of the general election to attempt to detect any malicious manipulation of the database that may cause voter disenfranchisement or disruption during the election. Voters should be notified of the known security breaches and asked to verify their voter registration on line well in advance of the election dates.

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In sum, if the remedial action described above is initiated immediately, the Secretary and the State Election Board have sufficient time and resources to ensure that Georgia citizens have a far more reliable and secure election system in the upcoming primaries and general elections, which will greatly enhance voter confidence. We look forward to your immediate response, and welcome any questions you may have.

Sincerely,



Bruce P. Brown

cc: Cary Ichter
Robert A. McGuire, III
William Brent Ney
Marilyn R. Marks
Laura Digges
William Digges, III
Ricardo Davis
Megan Missett
David D. Cross
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February 18, 2019

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Re: HB316 and *Curling v. Raffensperger*

Dear Vincent and Bryan:

Initially, Cary, Rob and I look forward to working with you in this litigation. I'm writing with respect to our clients' views on the voting system provisions of the recently introduced HB316. To be clear: the electronic ballot marking devices ("BMDs") authorized by HB316 will not provide secure or auditable elections or resolve the issues raised in the litigation.

I have attached a letter from twenty-four of the nation's leading elections experts urging Georgia in the strongest possible terms not to deploy BMD's because they do not create election results that can be tested or audited. As the letter states: "BMDs share the pervasive security vulnerabilities found in all electronic voting systems, including the insecure, paperless DREs in current use statewide." In addition, "voter verification" of a BMD-market ballot is unreliable and sporadic, rendering elections conducted with BMD's "unauditable."

In her September 17 ruling in this case, Judge Totenberg wrote:

Transparency and accountability are, at the very least, essential to addressing the significant issues that underlie this case.

Vincent Russo and Bryan Tyson
February 18, 2019
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Curling v. Kemp, 334 F. Supp. 3d 1303, 1307 (N.D. Ga. 2018). HB316 provides neither basic transparency or accountability in a voting system. Her opinion further explained:

Suffice it to say, at this juncture, that national-and state-commissioned research-based studies by cybersecurity computer scientists and elections experts consistently indicate that an independent record of an elector's physical ballot is essential as a reliable audit confirmation tool.

334 F. Supp. 3d at 1309. As Professor Philip Stark, the nation's leading expert in post-election auditing, has warned, the proposed electronic BMDs do not provide an independent record that can serve as a "reliable audit confirmation tool."

Judge Totenberg concluded her decision as follows:

If a new balloting system is to be launched in Georgia in an effective manner, it should address democracy's critical need for transparent, fair, accurate, and verifiable election processes that guarantee each citizen's fundamental right to cast an accountable vote.

334 F. Supp. 3d at 1328. The experts agree that BMDs accomplish none of the essential needs that Judge Totenberg articulates, and that our litigation seeks.

We allege in the Third Amended Complaint that requiring touchscreen DREs "violates the voters' constitutional rights to have their votes recorded in a fair, precise, verifiable, and anonymous manner, and to have their votes counted and reported in an accurate, auditable, legal, and transparent process." The similar electronic touchscreen process of BMD voting has the same problems for the same fundamental reasons.

The electronic BMD provisions of this year's HB316 are almost identical to the electronic BMD provisions of last year's 2018-SB403, which the legislature wisely defeated. We alleged in the Third Amended Complaint that last year's SB403 "failed to address what is required to remedy the problem":

Crucially, though its proponents called the bill a "paper ballot" bill, SB403 did not require hand-marked auditable paper ballots. Instead, SB403 sought to authorize a new type of unverifiable electronic voting system technology that, while favored by Defendant Secretary of State Brian Kemp and the bill's sponsors, was roundly criticized by experts as an insecure, dangerously hackable, high-risk technology.

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Page Three

Third Amended Complaint, ¶ 12. The electronic BMD provisions of 2018-SB403 and 2019-HB316 are almost identical and neither begin to solve the problems identified in our lawsuit.

Additionally, although little has been said to date about our allegations of the violation of secret ballot constitutional guarantees, our clients and their experts are concerned that the systems under current consideration may include the ability to connect the voter to his ballot either at the scanner level cast vote record or at the BMD level printer, depending on which vendors' equipment is selected. We urge the Secretary's office and the State Board of Elections to fully explore the technology used in multiple components of systems under consideration to ensure that the anonymity of the ballot cannot be compromised.

In addition to multiple other allegations and portions of our claims, our plaintiffs sought relief "requiring the conduct in each case of post-election audits of paper ballots to verify the results reported by the tabulation machines." The paper ballots that are produced by the proposed BMD systems cannot be audited to verify the reported results.

We urge you to use your influence to persuade legislators to reject HB316 because it not good for Georgia voters (or taxpayers) and will not cure the constitutional deficiencies identified in the Third Amended Complaint.

Please let me know if you have questions or would like to discuss these issues.

Sincerely,

A handwritten signature in blue ink, appearing to read "B. P. Brown", written over a horizontal line.

Bruce P. Brown

cc: Cary Ichter
Robert A. McGuire
David D. Cross
Halsey G. Knapp
Kaye Burwell

January 7, 2019

The Honorable Robyn Crittenden
Secretary of State Elect Brad Raffensperger
Rep. Barry Fleming
Members of the SAFE Commission
214 State Capitol
Atlanta, Georgia 30334 (via e-mail)

Dear Secretary Crittenden, Secretary Elect Raffensperger, and SAFE Commission Members:

We write to urge you to follow the advice of election security experts nationwide, including the National Academies of Sciences, the Verified Voting Foundation, Freedomworks, the National Election Defense Coalition, cyber security expert and Commission member Professor Wenke Lee, and the many states that are abandoning vulnerable touchscreen electronic voting machines in favor of hand-marked paper ballots as the best method for recording votes in public elections.

Our strong recommendation is to reject computerized ballot marking devices (BMDs) as an option for Georgia's voting system, except when needed to accommodate voters with disabilities that prevent them from hand-marking paper ballots. Hand-marked paper ballots, scanned by modern optical scanners and used in conjunction with risk-limiting post-election audits of election results, should be the standard balloting method statewide.

Although they are expensive and complex devices, computerized ballot markers perform a relatively simple function: recording voter intent on a paper ballot. Since there are no objective, quantitative studies of their benefits, acquiring BMDs for widespread use risks burdening Georgia taxpayers with unnecessary costs. Furthermore, BMDs share the pervasive security vulnerabilities found in all electronic voting systems, including the insecure, paperless DREs in current use statewide. These reasons alone should disqualify BMDs from widespread use in Georgia's elections, especially since there is a better alternative.

Hand-marked paper ballots constitute a safer and less expensive method of casting votes. Hand-marked paper ballots offer better voter verification than can be achieved with a computerized interface. A paper ballot that is indelibly marked by hand and physically secured from the moment of casting is the most reliable record of voter intent. A hand-marked paper ballot is the only kind of record not vulnerable to software errors, configuration errors, or hacking.

The SAFE Commission has heard testimony about voter errors in marking paper ballots and the susceptibility of paper ballots to tampering or theft. No method of balloting is perfect, but vulnerabilities in computerized marking devices, if exploited by hackers or unchecked by bad system designs, raise the specter of large-scale, jurisdiction-wide failures that change election outcomes. For example, with hand-marked paper ballots, voters are responsible only for their own mistakes. On the other hand, voters who use BMDs are responsible not only for

their own mistakes but also for catching and correcting errors or alterations made by a BMD which marks ballots for hundreds of voters. For this reason, well-designed hand-marked paper ballots combined with risk-limiting post-election tabulation audits is the gold standard for ensuring that reported election results accurately reflect the will of the people.

Voter verification of a BMD-market ballot is the principle means of guarding against software errors that alter ballot choices. Many BMDs present a ballot summary card to the voter for verification. The 2018 National Academies of Science, Engineering and Medicine Consensus Report *Securing the Votes: Protecting American Democracy*, which represents the nation's best scientific understanding of election security and integrity, states: "Unless a voter takes notes while voting, BMDs that print only selections with abbreviated names/descriptions of the contests are virtually unusable for verifying voter intent." Although advocates of touchscreen ballot marking devices claim that the human readable text ballot summary cards are "voter verifiable," the contrary is true: voter verified summary cards that contain errors (whether induced by hacking or by design flaws) are likely to be mistakenly cast, making a valid audit impossible. A post-election audit requires a valid source document, either marked directly by the voter or voter verified. Since voter verification of printed ballot summary cards (the source document) is sporadic and unreliable, elections conducted with most ballot marking devices are unauditabile.

While you may have been told that touchscreen systems are more "modern" devices, many of your peers and most election security experts have found this appeal to be based on a mistaken view that the voting public will naively accept new technology as a "step forward." We are intimately familiar with the hidden costs, risks, and complexity of these new technologies. We can assure you there is objective scientific and technical evidence supporting the accuracy of traditional, easily implemented scanned and audited hand-marked paper ballot systems. We urge you to recommend such a system as the safest, most cost-effective, and transparent way of conducting future elections.

If we can be of help in providing more information, we hope you will feel free to call upon us.

Sincerely,

Dr. Mustaque Ahamad
Professor of Computer Science,
Georgia Institute of Technology

Dr. Andrew Appel
Eugene Higgins Professor of Computer
Science
Princeton University

Dr. David A. Bader, Professor
Chair, School of Computational Science and
Engineering
College of Computing
Georgia Institute of Technology

Matthew Bernhard
University of Michigan
Verified Voting

Dr. Matt Blaze
McDevitt Chair in Computer Science and Law
Georgetown University

Dr. Duncan Buell
NCR Professor of Computer Science and
Engineering
Dept. of Computer Science and Engineering
University of South Carolina

Dr. Richard DeMillo
Charlotte B. and Roger C. Warren Professor
of Computing
Georgia Tech

Dr. Larry Diamond
Senior Fellow
Hoover Institute and Freeman Spogli Institute
Stanford University

David L. Dill
Donald E. Knuth Professor, Emeritus, in the
School of Engineering and Professor of
Computer Science, Stanford University
Founder of VerifiedVoting.org

Dr. Michael Fischer
Professor of Computer Science
Yale University

Adam Ghatti
Founder / CTO
Ionic Security Inc.

Susan Greenhalgh
Policy Director
National Election Defense Coalition

Dr. Candice Hoke
Founding Co-Director, Center for
Cybersecurity & Privacy Protection
C|M Law, Cleveland State University

Harri Hursti
Security Researcher
Nordic Innovation Labs

Dr. David Jefferson
Lawrence Livermore National Laboratory

Dr. Douglas W. Jones
Department of Computer Science
University of Iowa

Dr. Justin Moore
Software Engineer
Google

Dr. Peter G. Neumann
Chief Scientist
SRI International Computer Science Lab
Moderator of the ACM Risks Forum

Dr. Ronald L. Rivest
Institute Professor
MIT

Dr. Aviel D. Rubin
Professor of Computer Science
Johns Hopkins University

Dr. John E. Savage
An Wang Professor Emeritus of Computer
Science
Brown University

Dr. Barbara Simons
IBM Research (Retired)
Former President, Association for Computing
Machinery

Dr. Eugene H. Spafford
Professor
Purdue university

Dr. Philip Stark
Associate Dean, Division of Mathematics and
Physical Sciences,
University of California, Berkeley

Affiliations are for identification purposes only. They do not imply institutional endorsements.

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Bruce P.
Brown
Law

April 1, 2019

Vincent Russo
Robbins Ross Alloy Belinfante
Littlefield LLC
500 Fourteenth St. NW
Atlanta, Georgia 30318

Bryan P. Tyson
Taylor English Duma LLP
Suite 200
1600 Parkwood Cir.
Atlanta, Georgia 30329

Re: HB316 and *Curling v. Raffensperger*, No. 17-CV-02989-AT (N.D. Ga.)

Dear Vincent and Bryan:

I am following up on Coalition Plaintiff's letter of March 24, 2019 regarding the troubling aspects of HB316's mandate of electronic ballot marking device voting systems ("BMDs").

I want to bring to your attention the attached news release and letter from four U.S. Senators to the three largest voting system suppliers issued March 27, 2019 (Exhibit A). These Senators raise some of the same questions Coalition Plaintiffs and experts have raised in repeated communications concerning the security and verifiability of BMDs. Please note that the Senators also raise the issue of voter privacy and secret ballot protections in their questions, as Coalition has also raised. We forward this to you to ensure that Secretary Raffensperger and the State Election Board have seen it and encourage them to consider the escalating national security concerns about BMDs and to adopt the straightforward solution of hand marked paper ballots laid out in our previous demand letters.

I also enclose a briefing prepared by OSET Institute entitled "Georgia State Election Technology Acquisition: Assessing Recent Legislation in Light of Planned Procurement" ("the OSET Briefing") (Exhibit B). As you may know, OSET is an independent non-profit organization devoted to researching and developing technology to increase verification, accuracy and security in voting systems. The OSET Briefing analyzes the conflicts between HB316, the State's RFP, and the EAC-certified vendors'

Mssrs. Russo and Tyson

April 1, 2019

Page 2

BMD products, and concludes that the vast majority of BMDs in the marketplace “do *not* allow voters to verify the same choice data that the voting system in fact uses to tabulate votes.” This appears to leave the smaller vendors as the only minimally qualified bidders, further increasing the high risk of insecure and ineffective implementation. In addition, the OSET Briefing questions that feasibility of implementing a new election system in time for the 2020 elections.

Given the significant questions concerning BMD systems coming from Congress, computer scientists, auditing experts, cybersecurity experts, and Coalition Plaintiffs, and the monumental task of implementation of a new voting system, it is unrealistic to anticipate that the system contemplated by HB316 will be implemented for the 2020 elections. The interim solution we have previously described should be implemented immediately to avoid these serious risks and to ensure election integrity.

Please let me know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce P. Brown", written in a cursive style.

Bruce P. Brown

cc: Marilyn R. Marks
Robert A. McGuire
Cary Ichter
Kaye Woodard Burwell
Halsey G. Knapp
David D. Cross
Catherine L. Chapple

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A

Amy Klobuchar

U.S. Senator for Minnesota

Ranking Members Klobuchar, Warner, Reed, and Peters Press Election Equipment Manufacturers on Security

March 27, 2019

Intelligence Agencies have confirmed that our election systems are a target for foreign adversaries, yet election vendors continue to sell equipment with known vulnerabilities

The Ranking Members of the Senate Rules, Intelligence, Armed Services, and Homeland Security Committees are requesting information about the security of voting systems

WASHINGTON – U.S. Senator Amy Klobuchar (D-MN), Ranking Member of the Senate Rules Committee with oversight jurisdiction over federal elections, sent a letter to the country's three largest election system vendors with questions to help inform the best way to move forward to strengthen the security of our voting machines. In the U.S., the three largest election equipment vendors—Election Systems & Software, LLC; Dominion Voting Systems, Inc.; and Hart InterCivic, Inc.—provide the voting machines and software used by ninety-two percent of the eligible voting population. However, voting and cybersecurity experts have begun to call attention to the lack of competition in the election vendor marketplace and the need for scrutiny by regulators as these vendors continue to produce poor technology, like machines that lack paper ballots or auditability.

Klobuchar was joined on the letter by Senator Mark Warner (D-VA), Vice Chairman of the Senate Intelligence Committee, Senator Jack Reed (D-RI), Ranking Member of the Senate Armed Services Committee, and Senator Gary Peters (D-MI), Ranking Member of the Senate

Homeland Security Committee.

“The integrity of our elections remains under serious threat. Our nation’s intelligence agencies continue to raise the alarm that foreign adversaries are actively trying to undermine our system of democracy, and will target the 2020 elections as they did the 2016 and 2018 elections,” the senators wrote. **“The integrity of our elections is directly tied to the machines we vote on – the products that you make. Despite shouldering such a massive responsibility, there has been a lack of meaningful innovation in the election vendor industry and our democracy is paying the price.”**

The full text of the letter is below:

March 26, 2019

Mr. Phillip Braithwaite

President and Chief Executive Officer

Hart InterCivic, Inc.

Mr. Tom Burt

President and Chief Executive Officer

Election Systems & Software, LLC

Mr. John Poulos

President and Chief Executive Officer

Dominion Voting Systems

Dear Mr. Braithwaite, Mr. Burt, and Mr. Poulos:

We write to request information about the security of the voting systems your companies manufacture and service.

The integrity of our elections remains under serious threat. Our nation's intelligence agencies continue to raise the alarm that foreign adversaries are actively trying to undermine our system of democracy, and will target the 2020 elections as they did the 2016 and 2018 elections. Following the attack on our election systems in 2016, the Department of Homeland Security (DHS) designated election infrastructure as critical infrastructure in order to protect our democracy from future attacks and we have taken important steps to prioritize election security. We appreciate the work that your companies have done in helping to set up the Sector Coordinating Council (SCC) for the Election Infrastructure Subsector.

Despite the progress that has been made, election security experts and federal and state government officials continue to warn that more must be done to fortify our election systems. Of particular concern is the fact that many of the machines that Americans use to vote have not been meaningfully updated in nearly two decades. Although each of your companies has a combination of older legacy machines and newer systems, vulnerabilities in each present a problem for the security of our democracy and they must be addressed.

On February 15, the Election Assistance Commission's (EAC) Commissioners unanimously voted to publish the proposed Voluntary Voting System Guidelines 2.0 (VMSG) Principles and Guidelines in the Federal Register for a 90 day public comment period. As you know, this begins the long-awaited process of updating the Principles and Guidelines that inform testing and certification associated with functionality, accessibility, accuracy, auditability, and security. The VMSG have not been comprehensively updated since 2005 – before the

iPhone was invented – and unfortunately, experts predict that updated guidelines will not be completed in time to have an impact on the 2020 elections. While the timeline for completing VVSG 2.0 is frustrating, these guidelines are voluntary and they establish a baseline – not a ceiling – for voting equipment. Furthermore, VVSG 1.1 has been available for testing since 2015.

In other words, the fact that VVSG 2.0 remains a work in progress is not an excuse for the fact that our voting equipment has not kept pace both with technological innovation and mounting cyber threats. There is a consensus among cybersecurity experts regarding the fact that voter-verifiable paper ballots and the ability to conduct a reliable audit are basic necessities for a reliable voting system. Despite this, each of your companies continues to produce some machines without paper ballots. The fact that you continue to manufacture and sell outdated products is a sign that the marketplace for election equipment is broken. These issues combined with the technical vulnerabilities facing our election machines explain why the Department of Defense's Defense Advanced Research Projects Agency (DARPA) is reportedly working to develop an open source voting machine that would be secure and allow people to ensure their votes were tallied correctly.

As the three largest election equipment vendors, your companies provide voting machines and software used by 92 percent of the eligible voting population in the U.S. This market concentration is one factor among many that could be contributing to the lack of innovation in election equipment. The integrity of our elections is directly tied to the machines we vote on – the products that you make. Despite shouldering such a massive responsibility, there has been a lack of meaningful innovation in the election vendor industry and our democracy is paying the price.

In order to help improve our understanding of your businesses and the integrity of our election systems, we respectfully request answers to the following questions by April 9, 2019:

1. What specific steps are you taking to strengthen election security ahead of 2020? How can Congress and the federal government support these actions?

2. What additional information is necessary regarding VVSG 2.0 in order for your companies to begin developing systems that comply with the new guidelines?
3. Do you anticipate producing systems that will be tested for compliance with VVSG 1.1? Why or why not?
4. What steps, if any, are you taking to enhance the security of your oldest legacy systems in the field, many of which have not been meaningfully updated (if at all) in over a decade?
5. How do EAC certification requirements and the certification process affect your ability to create new election systems and to regularly update your election systems?
6. Do you support federal efforts to require the use of hand-marked paper ballots for most voters in federal elections? Why or why not?
7. How are you working to ensure that your voting systems are compatible with the EAC's ballot design guidelines (i.e. "*Effective Designs for the Administration of Federal Elections*")?
8. Experts have raised significant concerns about the risks of ballot marking machines that store voter choice information in non-transparent forms that cannot be reviewed by voters (i.e. such as barcodes or QR codes), noting that errors in the printed vote record could potentially evade detection by voters. Do you currently sell any machines whose paper records do not permit voters to review the same information that the voting system uses for tabulation? If so, do you believe this practice is secure enough to be used in the 2020 election cycle?
9. Do you make voting systems with Cast Vote Records (CVRs) that can be reliably connected to specific unique ballots, while also maintaining voter privacy? If not, why not? Does your company make voting systems that allow for a machine-readable data export of these CVRs in a format that is presentation-agnostic (such as JSON) and can be reliably parsed without substantial technical effort? If not, why not?

10. Would you support federal legislation requiring expanded use of routine post-election audits, such as risk-limiting audits, in federal elections? Why or why not?
11. What portion of your revenue is invested into research and development to produce better and more cost effective voting equipment?
12. Congress is currently working on legislation to establish information sharing procedures for vendors regarding security threats. How does your company currently define a reportable cyber-incident and what protocols are in place to report incidents to government officials?
13. What steps are you taking to improve supply chain security? To the extent your machines operate using custom, non-commodity hardware, what measures are you taking to ensure that the supply chains for your custom hardware components are monitored and secure?
14. Do you employ a full-time cybersecurity expert whose role is fully dedicated to improving the security of your systems? If so, how long have they been on staff, and what title and authority do they have within your company? Do you conduct background checks on potential employees who would be involved in building and servicing election systems?
15. Does your company operate, or plan to operate, a vulnerability disclosure program that authorizes good-faith security research and testing of your systems, and provides a clear reporting mechanism when vulnerabilities are discovered? If not, what makes it difficult for your company to do so, and how can Congress and the federal government help make it less difficult?
16. How will DARPA's work impact how your company develops and manufactures voting machines?

We look forward to your answers to these questions, and thank you for your efforts to work with us and with state election officials around the country to improve the security of our nation's elections.

Sincerely,

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Georgia State Election Technology Acquisition

Assessing Recent Legislation in Light of Planned Procurement

Prepared By:

Edward Perez

Global Director
Technology Development

Joy London

Associate General Counsel

Gregory Miller

Chief Operating Officer

Version 8 Final | March 2019

Executive Summary

Following the recent production of a Briefing on cost realities for the system of apparent choice in Georgia, the Institute took note of the apparent concerns over whether and to what extent recent state legislation (HB.316) ready for the Governor's signature would overly control the procurement options for Georgia's new voting system. This Briefing examines the legislation and parses language to clarify meaning in light of our particular domain expertise in election technology and technology public policy, and reviews the RFP to ascertain whether and to what extent its interplay with the legislation would unduly constrain procurement.

Importantly, our Briefing necessarily restricts our examination of HB.316 to the extent of its application to the acquisition of voting systems technology and does not address any other aspect of the legislation.

Findings

1. **HB.316 Protects Voters' Right to a Verifiable Ballot.** HB.316 is well drafted to protect a voter's right to ensure their ballot is counted as cast. In fact, it clearly constrains what kind of voting system technology can be acquired in order to ensure that Georgia voters can verify their ballot to be cast as accurately reflecting their intended choices.
2. **There is a Conflict Between HB.316 and the RFP as Drafted.** Accordingly, there is a constraint on the RFP as released by the requirements of HB.316 for "voter verifiable" ballots because the vast majority of Ballot Marking Devices (BMDs) in the marketplace do *not* allow voters to verify the same choice data that the voting system in fact uses to tabulate votes.

3. **There is a Fundamental Definitional Problem.** HB.316 does not define either “ballot” or “verifiable,” therefore, it is unresolved whether the legislation adopts a formal or substantive definition of a ballot.
4. **Strictly Construed, the RFP and HB.316 in Combination Greatly Constrains Technology Solution Options.** Excepting two commercial solutions, a voter cannot verify the choices that are used for counting with today’s BMDs, therefore, there is no way for the voter to verify what choices are actually being counted, and hence for the majority of solutions, the ballot cannot be said to be “verifiable” by the voter.
5. **Strictly Construed ES&S ExpressVote, Dominion ImageCast X and Unisyn FreedomVote Product Cannot Qualify for Selection Under HB.316.** As drafted, the RFP and HB.316 prohibit the selection of these three products, and in fact, the RFP, in order to adhere to the letter of the new law of HB.316, would restrict the choice to a hybrid product offered by Hart InterCivic, or a traditional format ballot product from Clear Ballot.

Context

At the outset, it is important to contextualize the work in preparing this Briefing by the lead analyst [Edward Perez](#), given his highly relevant credentials. Mr. Perez, a former Director of Product Management and also Manager of Professional Services for one of the three major commercial vendors, has for years provided analysis and responses to Request For Proposal (RFP) responses for major procurements of election technology, which required a strong understanding of solution architecture, contractual terms and requirements, and industry-standard terminology and practices. Moreover, Mr. Perez has and continues to perform competitive intelligence research, which has enabled him to become very familiar with product features, pricing, and service practices associated with all of the major vendors. In sum, he is uniquely qualified to provide a pragmatic, and intellectually honest analysis of the relevant RFP and HB.316 legislation.

Similarly, [Gregory Miller](#), a co-founder of the Institute who is a veteran computer and software engineer and IP lawyer, and [Joy London](#), an associate general counsel and public policy expert with the Institute, both bring over a decade of experience in the analysis of election administration related legislation and review of requests for information, proposals, and quotes for the acquisition of election administration technology. In particular, Ms. London’s work focuses on critical democracy infrastructure, election security, election law, public policy and international government relations, and she leads the Institutes on-going legislation monitoring and analysis services. She offers a particular view through the lens of cybersecurity, having earned a Masters in Cyber Policy & Risk Analysis from Utica College, and published the Capstone research paper: *“The Threat of Nation-State Hacking of State Voter Registration Databases in U.S. Presidential Elections.”*

It is equally important to note the non-profit nonpartisan Institute has no stake in the outcomes in Georgia, other than exercising its mission to help ensure the public interest in this decision that will materially affect the integrity of Georgia elections, and therefore inevitably affect national election results.

Legislation Analysis

Question Presented

Does the statutory language of HB.316 restrict the choices of U.S. EAC-certified voting systems currently manufactured and sold by (1) ES&S ExpressVote, (2) Dominion's ImageCast X, (3) Unisyn FreedomVote, (4) Hart Verity Duo, and (5) Clear Ballot's Clear Access?

Discussion

Three of the five EAC-certified systems ((1) ES&S ExpressVote, (2) Dominion ImageCast X, and (3) Unisyn FreedomVote) under consideration by Georgia use Ballot Marking Devices (BMDs) to convert the voter's selections (of candidates and referenda options) viewed on the machines' screens to a barcode on a printed vote record, which is then fed into a scanner by the voter.

Although the printed vote record includes human-readable information that is supposed to show the votes cast by the voter, it is the barcode (*not readable by the voter*) that is digitally interpreted and counted by the scanner and is the basis for the ultimate tabulation of votes.

In contrast to the voting systems from ES&S, Dominion and Unisyn, the Hart Verity system tabulates voter choices based upon *optical character recognition of printed choice text (not barcodes)*, and the Clear Ballot system tabulates machine-marked traditional format ballots based on marked ovals (*not barcodes*).

The question presented turns on whether any of the voting systems manufactured and sold by these vendors are, in fact, "voter-verifiable."

HB.316, Page 2, Section 1. §7.1 defines "electronic ballot marker" (lines 43-48 with a focus on lines 45-48) as a device that:

"... uses electronic technology to independently and privately mark a paper ballot at the direction of an elector, interpret ballot selection, communicate such interpretation for the elector verification, and print an elector verifiable paper ballot."

The language in §7.1 – "elector verification" and "print an elector verifiable paper ballot" does *not* define the means of "verification" or the process by which the elector's vote is "verifiable." Therefore, other statutory language within HB.316 must be examined to determine the lawmakers' statutory intent of the words "elector verification" and "elector verifiable."

HB.316 contains four (4) other relevant sections that can be used to determine the Georgia lawmakers' intent of the meaning of "elector verification" and "elector verifiable." All four sections use either the word "reading" or "readable" by electors.

HB.316, Page 11, §16 (3) – lines 344-345 of HB.316, reads, in pertinent part:

"Ballots printed by an electronic ballot marker shall be designed as prescribed by the Secretary of State to ensure the ease of reading by electors"

HB.316, Page 12, §18 (2) – lines 378-380, reads, in pertinent part:

"... provided, however, that such electronic ballot markers shall produce paper ballots which are marked with the elector's choices in a format readable by the elector."

HB.316, Page 13, §21 (a) – lines 424-428, reads, in pertinent part:

“The ballots shall be printed . . . as will suit the construction of the ballot scanner, and in plain, clear type so as to be **easily readable by persons with normal vision** . . .”

HB.316, Page 16, §26 (6) – lines 535-536, reads, in pertinent part:

“Produce a paper ballot which is marked with the elector’s choices in a format **readable by the elector**.”

Analysis and the Issue

Because HB.316 does not define either “ballot” or “verifiable,” it is not immediately apparent whether the legislation adopts a **formal** or **substantive** definition of a ballot. In other words, a formal description of a ballot would simply specify (as does *Georgia Code § 21-2-280*) that a ballot may be electronic or printed on paper, without further specifying any requirements for how voter choices are to be counted or made available for verification by the voter.

On the other hand, a substantive definition of a ballot would go farther, and would conform with the common sense, plain-language understanding that the purpose of a ballot in the democratic voting process is to mark voter choices, which in turn serve as the basis for counting votes (*i.e.* “*tabulating*”).

Furthermore, a substantive definition of a “*voter-verifiable*” ballot would require that the ballot support a voter’s ability to verify *the choices that will be counted*, prior to casting the ballot.

Mindful of the distinction between a formal definition of a ballot, which focuses on the presentation of information (*e.g., a ballot marks voter choices electronically or on paper*), versus a substantive definition (*e.g., a ballot is a medium for marking voter choices that are to be counted, and those choices may or may not be transparent*), HB.316 is *unfortunately silent* on which definition of “ballot” is intended, or what “verifiable” means.

This gap is the crux of the issue, as some voting systems produce “ballots” that meet the formal definition, but not the substantive one, while other voting systems produce ballots that allow voters to review the choices that will, *strictly speaking*, serve as the basis for counting votes.

This distinction is all-important, because if the voter cannot verify the choices that are used *for counting*, then there is no way for the voter to know *what choices are being counted*.

Accordingly, such a “ballot” could not be said to be “voter-verifiable.”

Details

Class 1: Electronic Marking Devices

ES&S ExpressVote, Dominion ImageCast X, Unisyn FreedomVote

Each of the electronic marking devices above produces a paper record that meets a formal definition of a “ballot” insofar as the paper record lists voter choices in a manner that is human-readable. And voters do have the opportunity to verify the choices printed on the paper.

However, it is critical to note that the text that the voter can read is *not* used for purposes of counting the votes; instead, the ES&S, Dominion, and Unisyn voting systems count the “ballots” based on information that the voter cannot review, namely, choice information that is embedded in non-transparent barcodes. Accordingly, the human-readable text is a visual presentation

only, and does not rise to the functional level of providing information about voter marks and choices to the counting system. Stated another way, with these systems, it is as if the electronic marking device simultaneously generates *two* parallel “ballots,” with greatly different functional “weight:”

1. One that is interpreted by the voting system, and which is *not* verifiable by the voter, and
2. Another that bears a *cosmetic resemblance* to a ballot, but because its voter choice data is meaningless to the voting system, and is not used for counting, it is unclear whether it constitutes a ballot at all, or whether it is merely a human-readable facsimile of the non-transparent, non-verifiable “ballot” that gets counted.

As a result, with these non-transparent marking devices, it can be said that only the small fraction of voters whose ballots might be reviewed by human eyes in the exceptional case of a manual audit were able to “verify” their choices on the printed record in a manner that was meaningful, and this was only due to the post-election review process. Outside of that small set of ballots, for all other voters, the information that they “verified” on the printed page was not used by the voting system at all; it was inert text on a printed page.

Class 2: Electronic Marking Devices

Hart Verity Duo, Clear Ballot Clear Access

Each of the electronic marking devices above produces a paper record that meets a substantive definition of a “ballot” that could also be said to be “voter-verifiable.” This stems from the fact that their paper records list voter choices in a manner that is human-readable (either marked ovals, with Clear Ballot, or plaintext counted by OCR, with Hart), and *the choices that the voter has the opportunity to verify are the same choices that the voting system uses to count votes*. In this way, the voter has direct access to information about what choices are being counted, and whether they conform to the voter’s intent.

Conclusion to the Question Presented

Does the statutory language of HB.316 restrict the choices of US EAC-certified voting systems currently manufactured and sold by (1) ES&S ExpressVote, (2) Dominion ImageCast X, (3) Unisyn FreedomVote, (4) Hart Verity Duo, and (5) Clear Ballot Clear Access?

It is not clear whether the statutory language of HB.316 restricts Georgia’s ability to select certain EAC-certified voting systems for purposes of a statewide voting system procurement.

Whether a formal presentation of marked voter choices is adequate to meet the standard of “voter-verifiability,” even if voting system does not count those choices, or whether “verifiability” requires that voters have the substantive opportunity to verify the same choice information that the voting system uses to count votes is a legal question that has not been answered. Answering that question touches upon a variety of other issues that must be tested, including:

1. What is the definition of a “ballot”?
2. Given HB.316’s definition (line 31) of “Ballot marking device” as “a pen, pencil, or similar writing tool, or an electronic device designed for use in marking paper ballots *in a manner that is detected as a vote so cast* [emphasis added] and then counted by ballot

scanners,” what does “detected” mean? For purposes of counting, is it acceptable for the voting system to “detect” only information that was not, strictly speaking, marked by the voter? Why or why not?

3. Given HB.316’s definition (Line 53) of “Optical scanning voting system” as “a system employing paper ballots on which electors cast votes with a ballot marking device or electronic ballot marker after which *votes are counted* [emphasis added] by ballot scanners,” what constitutes a “vote” that must be counted? Is it only the information that the voter can verify, or something else? Why?
4. What constitutes a voter’s “verification” of his or her “choices” or “vote”?
5. What is the legal status of encoded voter choice information that an automated voting system processes to produce results, when it is accompanied by additional text? If a voter cannot review and identify errors in the encoded information before casting the ballot, what are the implications under 52 U.S.C. 21081, Sec. (1)(A)(i) and (1)(A)(ii)? ²

The questions must be addressed in a legal context. Then and only then can the courts determine whether a voting system that uses a BMD (*with or without a barcode*) meets the statutory intent in HB.316.

In a recent paper,³ *Election Security & the Right to Vote: Rights and Remedies Implicated by Election Hacking*” it is argued that a court’s decision as to whether a BMD ballot would meet a statutory definition should be based on constitutional law—both federal and state.

To date, the Institute knows of no litigation or case law that can resolve the questions likely to be presented by the combination of HB.316, the GA RFP for new systems acquisition, and the decisions that will be made as a result. However, considering this one publication, we can offer their following observations:

- “The Due Process Clause of the Fourteenth Amendment . . . protects against voting restrictions that render a voting system “fundamentally unfair.”
- While “garden variety election irregularities” do not rise to that level, state election procedures and standards run afoul of due process if they “result in significant disenfranchisement and vote dilution.”

² 52 U.S.C. 21081, Sec. (1)(A)(i) and (1)(A)(ii) provides in relevant part:

(a) Requirements. Each voting system used in an election for Federal office shall meet the following requirements:

(1) In general

(A) Except as provided in subparagraph (B), the voting system (including any lever voting system, optical scanning voting system, or direct recording electronic system) shall—

(i) permit the voter to verify (in a private and independent manner) the votes selected by the voter on the ballot before the ballot is cast and counted;

(ii) provide the voter with the opportunity (in a private and independent manner) to change the ballot or correct any error before the ballot is cast and counted (including the opportunity to correct the error through the issuance of a replacement ballot if the voter was otherwise unable to change the ballot or correct any error);

³ Protect Democracy (November 2018). *Election Security & the Right to Vote: Rights and Remedies Implicated by Election Hacking*. Prepared by Altshuler Berzon, LLP. Last accessed on March 25, 2019 <https://protectdemocracy.org/update/white-paper-rights-and-remedies-implicated-by-election-hacking/>

- Courts have consistently held that once state actors have induced a voter’s reliance on a particular manner of voting, invalidation of that voter’s ballot is “fundamentally unfair.”
- Courts thus attempt to police the line between “sporadic” or “episodic” errors in a voting system (held to be “garden variety” and therefore not a violation), and pervasive problems that permeate a voting system (or result in a substantial rate of error or risk of error) that rise to the level of a federal constitutional problem.
- Courts have also examined whether state procedures provide for adequate corrective measures to address the problem.
- Some federal courts have expressed a desire to avoid micromanaging election recounts that are also being managed by state courts, even where errors may be outcome determinative.
- As with many federal constitutional questions in the realm of voting, there is no bright-line rule.
- A hack targeting insufficiently secure voting machines, voter rolls, or tabulation devices might cause an election to be conducted in a fundamentally unfair manner if it:
 - (a) Led to excessive lines at polling places, requiring voters to wait for hours to cast a ballot;⁴
 - (b) Caused the loss of a significant percentage of ballots cast or appeared to “flip” a significant number of votes;⁵
 - (c) Prevented the counting of significant numbers of ballots cast by qualified voters;⁶
or
 - (d) Prevented voters from casting a ballot due to malfunctioning or non-functioning machinery.⁷
- “The facts—in particular the scope of the problem created by hacking and the actions of the public officials in charge of the election before and after the hack—will make a great deal of difference.”

⁴ See: *Ury v. Santee*, 303 F. Supp. 119, 124, 126 (N.D. Ill. 1969)

⁵ See: *League of Women Voters*, 548 F.3d at 478 (stating that possibility that selections “jumped” from chosen candidate to another candidate on DRE implicated substantive due process if it occurred on significant scale).

⁶ See: *NEOCH v. Husted*, 696 F.3d 580, 586 (6th Cir. 2012) (finding that although the number and frequency of voter disqualifications resulting from poll worker error varied from “county to county, the problem as a whole is systemic and statewide”)

⁷ See: *League of Women Voters of Ohio v. Brunner*, 548 F.3d 463, at 478 (6th Cir. 2008) (stating that possibility that selections “jumped” from chosen candidate to another candidate on DRE implicated substantive due process if it occurred on significant scale).

RFP Analysis

All documents associated with the State of Georgia's RFP for a Statewide Voting System (SVS) – including the RFP itself, all attachments, and technical requirements, have been carefully reviewed by the Institute resulting in the following overall findings:

1. The Georgia RFP uses industry-standard requirements, written in a non-exclusionary manner.
2. In general, the RFP is fair, straightforward, and generally unremarkable and what the Institute would expect for a statewide voting system.
3. Rather than being written in a manner that steers toward a favored outcome, it provides the candidate vendor wide latitude to present product offerings, with almost no restrictive or prescriptive requirements, aside from uniform Ballot Marking Devices (BMDs) for all voters plus digital scanning equipment.
4. The one potential conflict of the RFP in the context of HB.316 is the requirement for “voter verifiable” ballots, whereas the majority of BMDs in the marketplace do not allow voters to verify the choice data that the scanner utilizes to tabulate votes.

In general, it is the Institute's position that it is a problematic burden on the right to vote, as the analysis of HB.316 earlier implies, to require a voter to cast a ballot that they cannot visually verify because the ballot choices that are to be counted are actually encoded in a barcode. The barcode cannot be deciphered by human visual inspection. Accordingly, the voter—assuming they actually inspect the ballot—is left to assume the data encoded in the barcode identically matches the printed choices appearing in human readable text adjacent to the barcode. This approach appears to violate U.S. constitutional principles (*see footnote 4, supra*).

This issue arises in [Attachment D](#), Mandatory Questions, *Voter-Handled Paper Ballot Verification* as follows:

The proposed SVS solution must provide a voter verifiable paper ballot for every vote cast. The proposed SVS must produce a physical, voter-handled ballot containing the voter's selections from the input made by the voter. It must also facilitate navigating, marking, and reviewing the displayed ballot on the Ballot Marking Device (BMD) that can be printed, scanned, imaged, and tabulated by the Polling Place Scanner (PPS) and Central Scanning Device (CSD).

The relevant language in HB.316 includes:

- Page 2, line 48: “*and print an elector verifiable paper ballot*”
- Page 11, line 344: “*(3) Ballots printed by an electronic ballot marker shall be designed as prescribed by the Secretary of State to ensure ease of reading by electors.*”
- Page 12, line 379: “*provided, however, that such electronic ballot markers shall produce paper ballots which are marked with the elector's choices in a format readable by the elector.*”
- Page 13, line 425: “*in plain, clear type so as to be easily readable by persons with normal vision; provided, however, that red material shall not be used except that all*

ovals appearing on the ballot to indicate where a voter should mark to cast a vote may be printed in red ink."

- Page 16, line 535: *"Produce a paper ballot which is marked with the elector's choices in a format readable by the elector;"*

On a process note, the Institute also observes there is a moderate risk associated with the State attempting to complete the majority of its Phase 2 "Phased Rollout" in Q-1 of next year (2020). As the Institute reads the RFP, aside from the ten (10) pilot counties that will implement in November 2019, the State will roll out a new system to 149 of the 159 counties in a federal Presidential Primary. That is unusual, because States and counties typically avoid the introduction of new technology or procedures in high-profile federal elections.

Observations on Technical Requirements

The Institute offers additional notes below regarding technical requirements.

Attachment E – Mandatory Scored Response Worksheet

While not a significant factor, the requirement of 2.4 is atypical in elections: *"Define how the proposed EMS can be virtualized to run on GASOS and county virtual operating system (OS) environments."* The Institute has not seen an RFP express a preference for virtualizing EMS applications; such is novel and unusual—not that we disagree with the notion, rather that this is a new concept and there is no evidence in the RFP of expressed security, reliability, or other operational service level requirements for such a preference.

Attachment I – Election Management System

These are industry-standard, non-exclusionary requirements. Not all EMS systems have integrated text-to-speech capabilities (Page 2). However, a desire for "text-to-speech" capabilities in the election definition process is common.

Attachment J – Polling Place Scanner

These are industry-standard, non-exclusionary requirements.

Attachment K – Central Scanning Device

These are industry-standard, non-exclusionary requirements.

Attachment L – Ballot Marking Device

These are industry-standard, non-exclusionary requirements. However, it is noteworthy that even in the important BMD Section, the requirements leave the field open for a variety of implementations, including ES&S ExpressVote, Dominion ImageCast X, Unisyn FreedomVote, and Hart Verity Duo.

The Institute also notes that the RFP clearly indicates that the State wants BMDs and separate scanners. Thus, the often heard concerns regarding all-in-one BMDs with scanners inside (a.k.a. the "*permission to cheat*"), which several good government organizations have brought to the attention of the Institute, while meritorious, are not applicable in this situation because those integrated devices have never been considered for Georgia and the RFP does not provide for them. In the professional opinion of the Institute, for the purposes

of addressing Georgia's HB.316 legislation and planned acquisition pursuant to the RFP analyzed, the all-in-one device option is a distraction.

Attachment M – EPoll Data Management System

These are industry-standard, non-exclusionary requirements, except for another atypical instance of a desire for virtualization: Page 3: “*Be virtualized to run on GASOS and county virtual operating system (OS) environments.*”

Attachment N – Electronic Poll Book

These are industry-standard, non-exclusionary requirements.

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3. Georgia Legislature (2019-2020 Session). *House Bill 316 (As passed by House and Senate)*; By: Representatives Fleming of the 121st, Jones of the 47th, Burns of the 159th, Rynders of the 152nd, Watson of the 172nd, and others. <http://www.legis.ga.gov/Legislation/en-US/display/20192020/HB/316>
4. State of Georgia (March 15, 2019). *Electronic Request for Proposal*, Event ID 47800-SOS0000037, *Statewide Voting System*. <https://www.gpbnews.org/post/heres-request-proposals-replace-georgias-voting-machines> including the following specific elements:
 - a. Appendix A – Line Specifications
 - b. Appendix B – Terms & Conditions
 - c. eRFP
 - i. Introduction
 - ii. Instructions to Suppliers
 - iii. General Business Requirements
 - iv. eRFP Proposal (Bid) Factors
 - v. Cost Proposal
 - vi. Proposal Evaluation, Negotiations, and Award
 - vii. Contract Terms and Conditions
 - viii. Attachment B – Definitions
 - ix. Attachment C – Background and Scope of Work
 - x. Attachment D – Mandatory Response Worksheet
 - xi. Attachment E – Mandatory Scored Response Worksheet
 - xii. Attachment F – Cost Worksheet
 - xiii. Attachment G – Litigation and Default
 - xiv. Attachment H – References
 - xv. Attachment I – Election Management System
 - xvi. Attachment J – Polling Place Scanner

- xvii. Attachment K – Central Scanning Device
 - xviii. Attachment L – Ballot Marking Device
 - xix. Attachment M – EPoll Data Management System
 - xx. Attachment N – Electronic Poll Book
 - xxi. Attachment O – Potential Equipment Distribution
 - xxii. Attachment R – Certificate of Non-Collusion
 - xxiii. Attachment T – Systems and Jurisdictions Implemented
5. Election Systems & Software, *Response to State of Georgia Electronic Request for Information, New Voting System*, Event Number 47800-SOS0000035, August 24, 2018.
 6. Letter from election cybersecurity experts to GA SoS and SAFE Commission, 01/07/2019
 7. Letter from the OSET Institute, Inc. to GA House of Representatives Subcommittee on Voting Technology of Government Affairs
 8. Appel, Andrew (December 3, 2018). *Freedom to Tinker: “Why Voters Should Mark Ballots By Hand.”* <https://freedom-to-tinker.com/2018/12/03/why-voters-should-mark-ballots-by-hand/>
 9. Cooper, Taylor (March 26, 2019). The Brunswick News: “Secretary of state meets with elections officials on Jekyll.” https://thebrunswicknews.com/news/local_news/secretary-of-state-meets-with-elections-officials-on-jekyll/article_fdd75020-df54-5fbc-a7d5-4d1644e14654.html
 10. National Academies of Sciences, Engineering, and Medicine (2018). *Securing the Vote: Protecting American Democracy*. <https://www.nap.edu/catalog/25120/securing-the-vote-protecting-american-democracy>
 11. Niesse, Mark (March 12, 2018). Atlanta Journal-Constitution: “Georgia voting machine debate pits election officials vs. tech experts.” <https://www.ajc.com/news/state--regional-govt--politics/georgia-voting-machine-debate-pits-election-officials-tech-experts/XcY73sFwLRKQAw7NPoNuRL/>
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 14. State of Georgia Secure, Accessible & Fair Elections (SAFE) Commission (2018). *Request for Information (RFI) for New Voting System*. http://sos.ga.gov/index.php/elections/secure_accessible_fair_elections_safe_commission
 15. State of Georgia (March 15, 2019). *Electronic Request for Proposal*, Event ID 47800-SOS0000037, *Statewide Voting System*. <https://www.gpbnews.org/post/heres-request-proposals-replace-georgias-voting-machines>

About the Authors


Edward Perez is formerly director of product development for a major commercial voting system vendor. After retiring from the commercial sector, he joined the nonpartisan nonprofit OSET Institute as Global Director of Technology Development. He holds degrees in Government and Political Science from Georgetown University and the University of California at Berkeley and has over 16 years direct experience in the design, development, delivery, deployment and servicing of commercial voting systems.














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Gregory Miller is a co-founder and Chief Operating Officer of the U.S. based 501.c.3 nonprofit non-partisan OSET Institute. He is a trained computer scientist, with graduate business education, and a law degree focused on intellectual property, technology law, and public policy. Greg's technical background includes user interface design, object-oriented software development, TCP/IP networking, and distributed systems. Mr. Miller has been immersed in the administration and technology of elections for over 12 years, including poll work volunteer, polling place monitor, election observer, and assessing Requests For Proposal regarding election administration systems. Gregory is an election technology security advisor to organizations of the national security community and the United States Congress. Mr. Miller served on the San Francisco Voting Systems Task Force from 2010-2012.

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U.S. PRESIDENT AND U.S. VICE PRESIDENT REP DONALD J. TRUMP
 U.S. SENATE-----REP SENATOR JOHN BOOZMAN
 U.S. CONGRESS DISTRICT 03 REP CONGRESSMAN STEVE WOMACK
 STATE REPRESENTATIVE DISTRICT 09 DIS-REP JEFF WILLIAMS
 COUNTY JUDGE-----REP JOSEPH K. WOOD
 COUNTY ASSESSOR-----REP ASSESSOR RUSSELL HELL
 CIRCUIT CLERK-----REP CIRCUIT CLERK KYLE SYLVESTER
 CONSTABLE DISTRICT 01 DISTRI-REP CONSTABLE JOHN DUGGAR
 MAYOR SPRINGDALE-----MAYOR DOUG SPROUSE
 CLERK/TREASURER SPRINGDALE-----NO SELECTION MADE
 ALDERMAN WARD 1 POSITION 2 SPRINGDALE-----ERIC FORD
 ALDERMAN WARD 2 POSITION 2 SPRINGDALE-----RAY DOTSON
 ALDERMAN WARD 3 POSITION 2 SPRINGDALE-----JEFF MATSON
 ALDERMAN WARD 4 POSITION 2 SPRINGDALE-----JEREMY LYNCH
 ISSUE NO. 1-----FOR ISSUE NO. 1
 ISSUE NO. 2-----FOR ISSUE NO. 2
 ISSUE NO. 3-----NO SELECTION MADE
 ISSUE NO. 4-----FOR ISSUE NO. 4
 ISSUE NO. 5-----FOR ISSUE NO. 5
 ISSUE NO. 6-----FOR ISSUE NO. 6
 ISSUE NO. 7-----FOR ISSUE NO. 7
 UNOPPOSED CANDIDATES-----NO SELECTION MADE